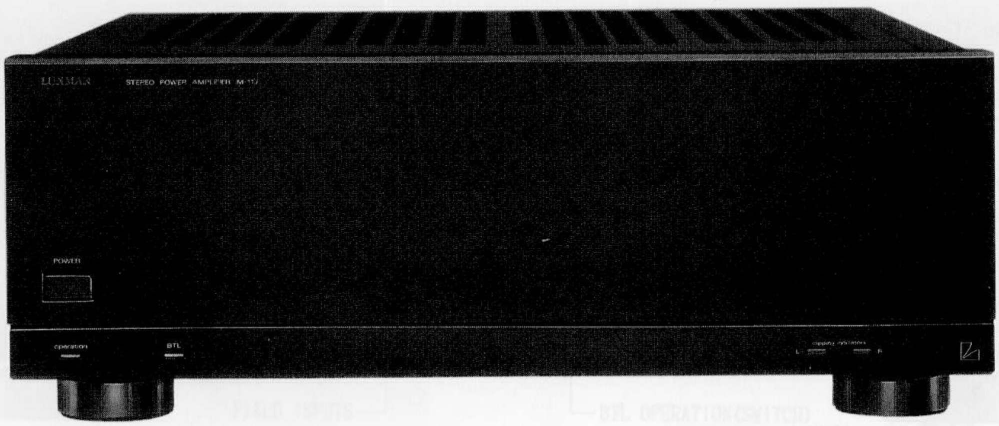
SERVICE MANUAL

Stereo Integlated Amplifier

M-117

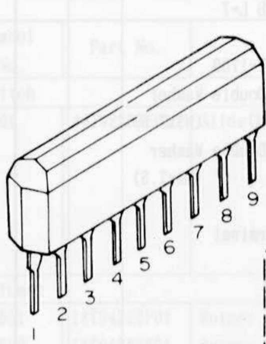
— REVISED —

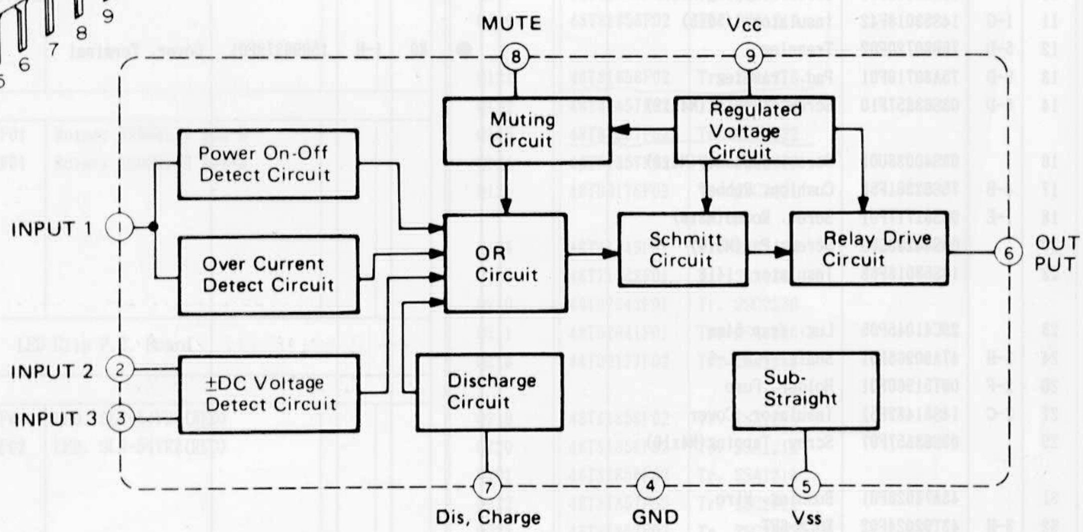
- Serial Numbers after No.81210651—A for M-117 (North American) model
- Concerning the contents not to be given in this manual, refer to the service manual (68P92578F02)



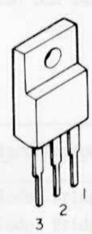
Semi-Conductor Lead Identifications

TA7317P:IC301

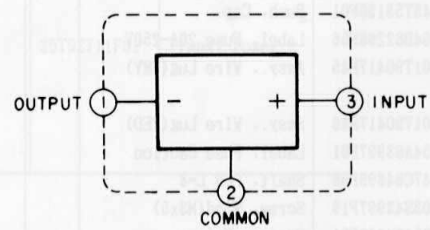




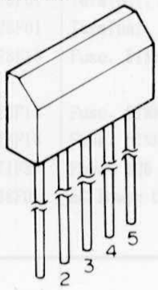
NJM78M12A:IC302



1. Output
2. Common
3. Input



2SA995 :Q101,201
2SC2291:Q102,202



1. Emitter 1
2. Collector 1
3. Base (Common)
4. Collector 2
5. Emitter 2

2SA1208:Q103,104,203,204



1. Emitter
2. Collector
3. Base

4. Removal of Main-Amp(R) P.C. Board

(1) After removal of Heatsink(R) remove twenty tow screws marked " * " as shown in Figure 6.

NOTE:Take care of handling each transistors when removing the Main-Amp(R) P.C. Board.

5. Removal of Heatsink(L) and Main-Amp(L) P.C. Board

(1) Remove in the same way above mentioned.

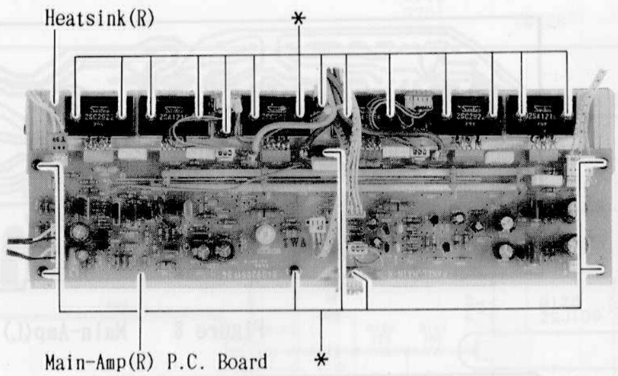


Figure 6

Adjustment Procedures

1. Connection

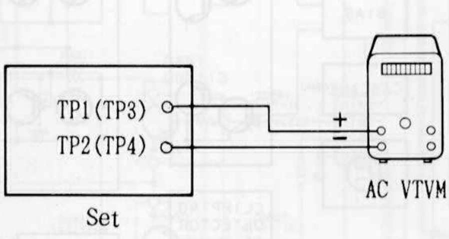


Figure 7

2. Control Setting

Attenuator(Left)········· Minimum   Power Switch ······ ON

Attenuator(Right) ······ Minimum   Others ·············· OFF

3. Adjustment Procedure

(1) Idling Adjustment(Figure 7,8 and 9)

Adjust VR101(VR201) so that voltage between TP1(TP3) and TP2(TP4) reaches 4 ±0.5mV

Adjustment Locations

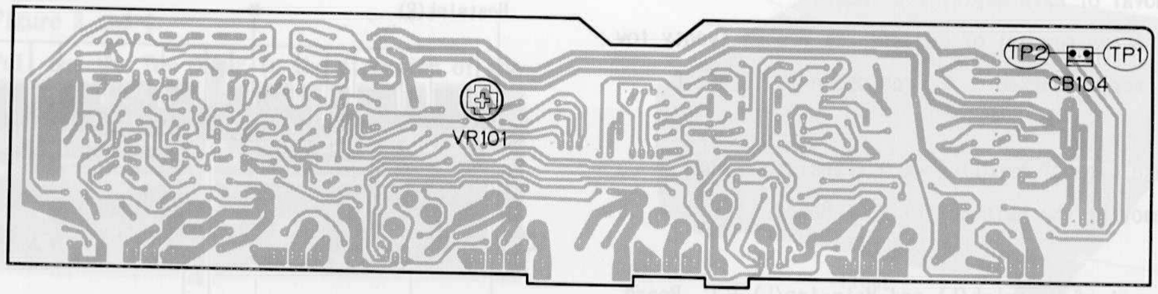


Figure 8 Main-Amp(L) P.C. Board(Component Side)

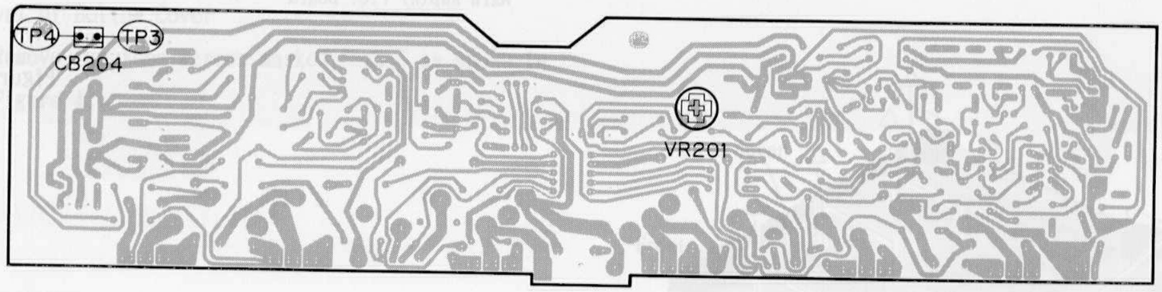
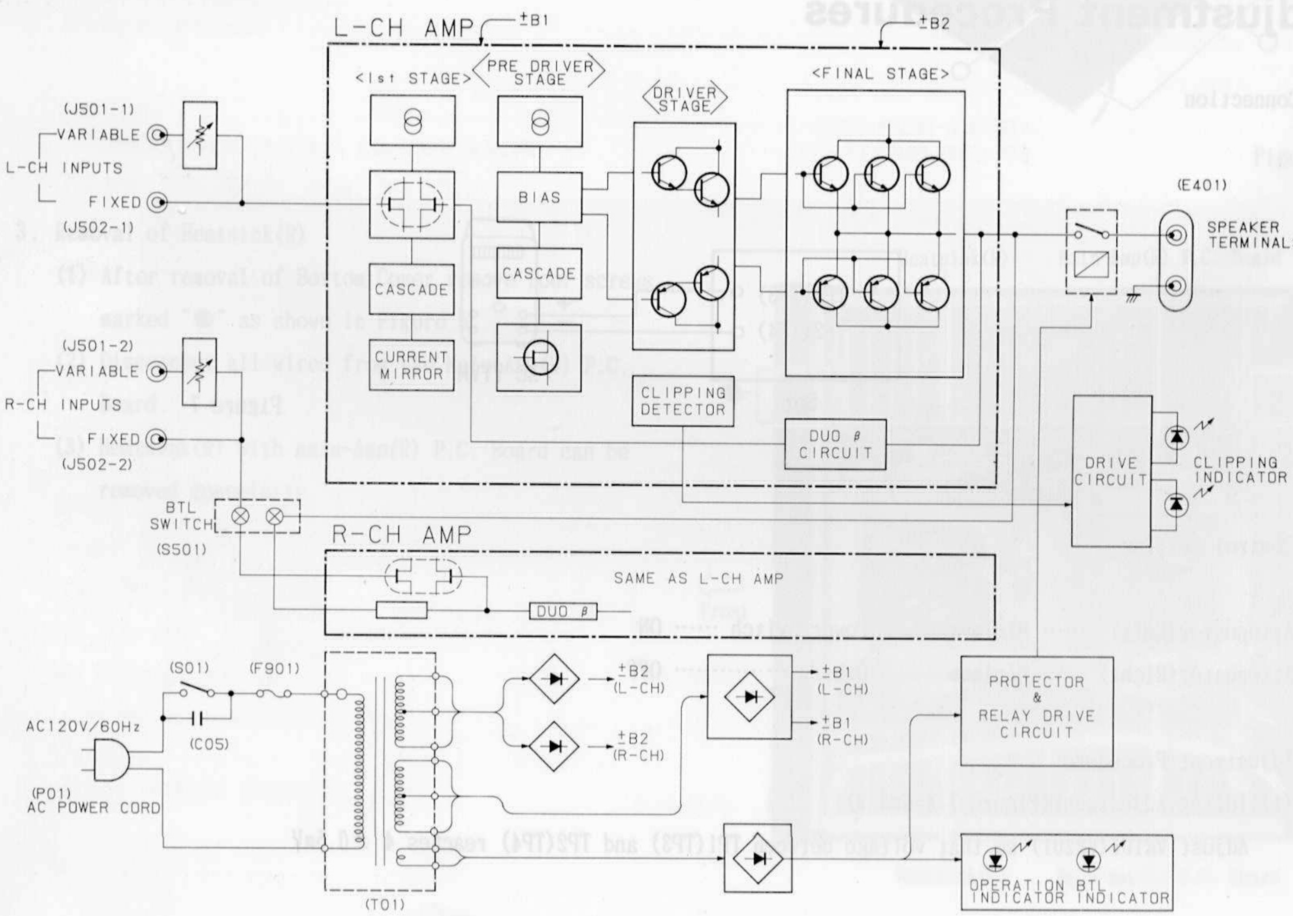


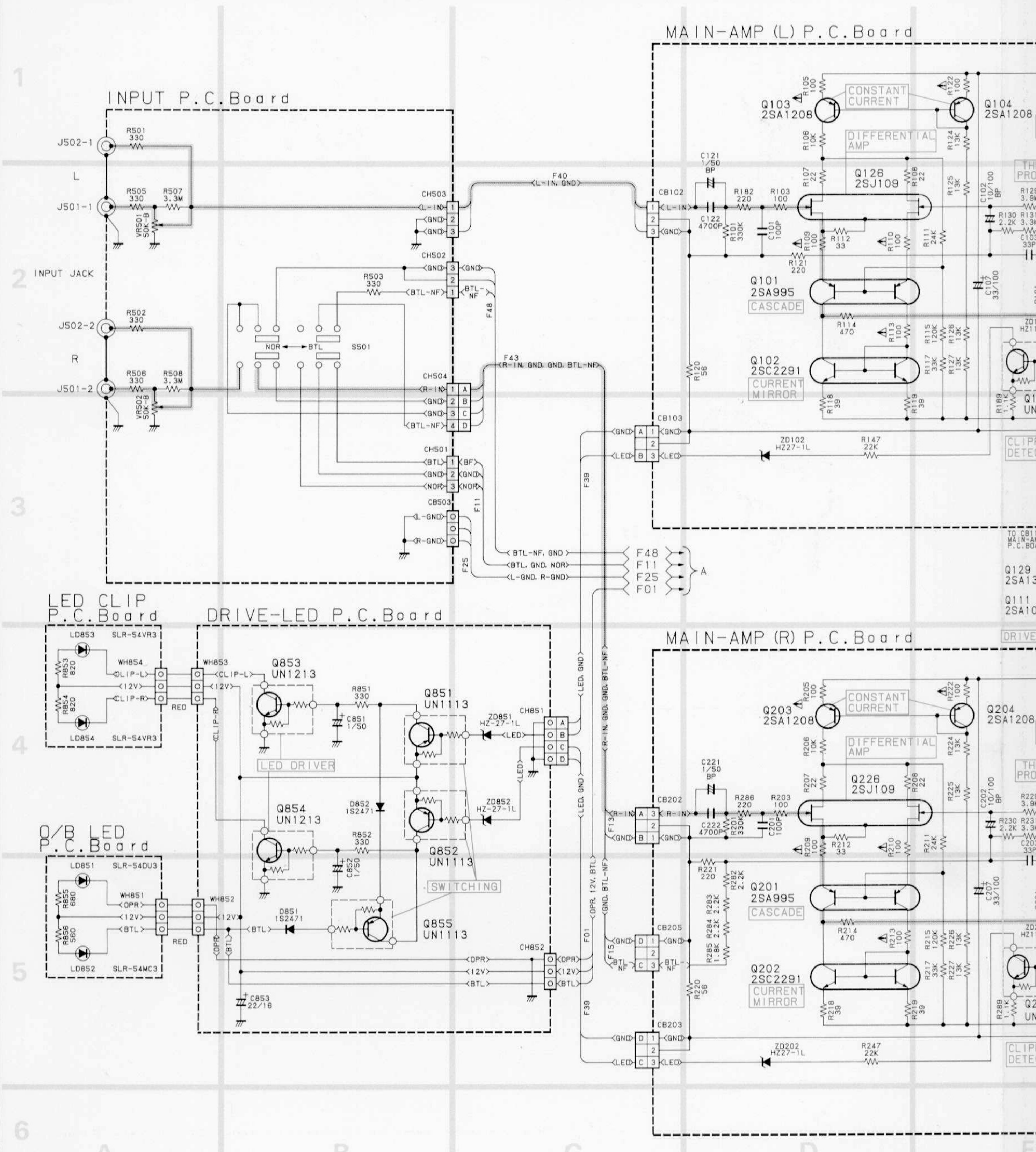
Figure 9 Main-Amp(R) P.C. Board(Component Side)

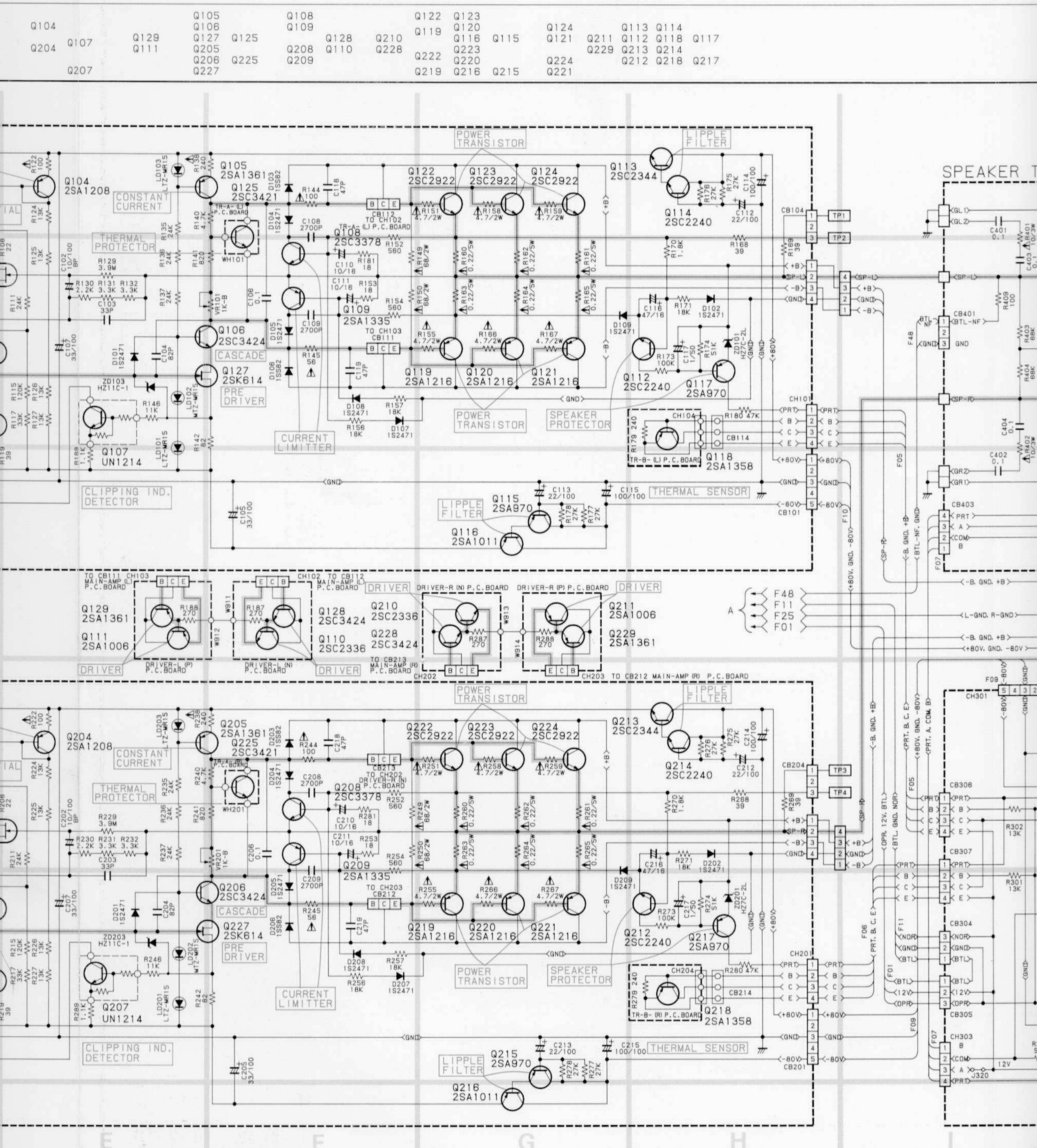
Block Diagram

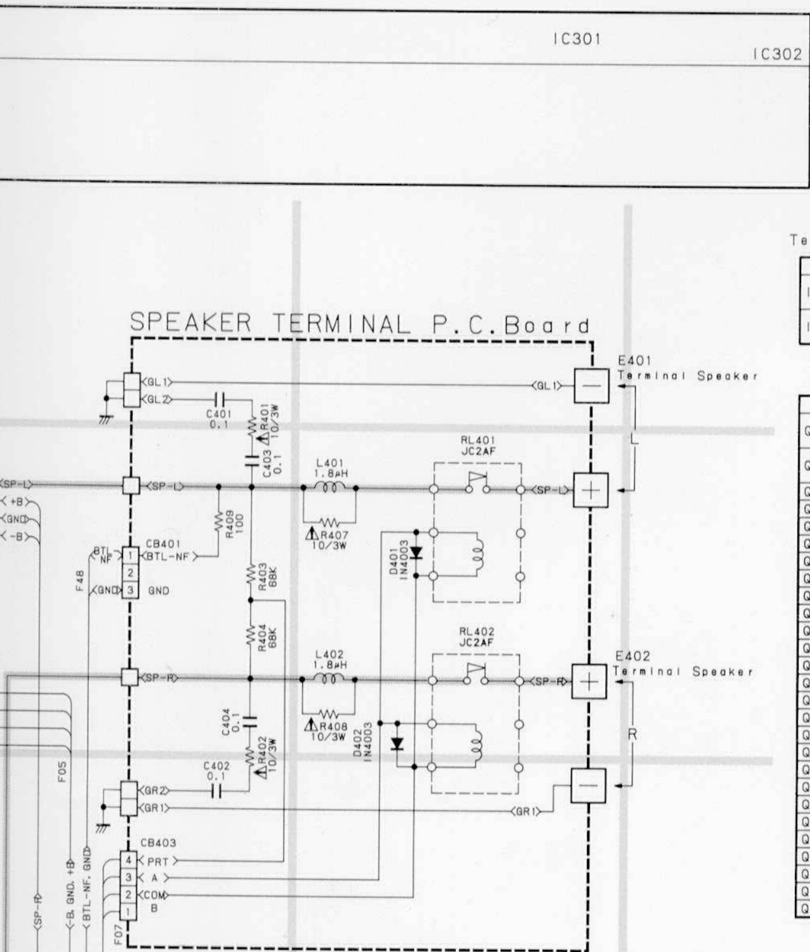


Schematic Diagram

IC							
Transistors (Q)	Q853 Q854	Q855	Q851 Q852	Q103 Q101 Q102 Q203 Q201 Q202	Q126 Q226	Q104 Q204	Q107 Q207




SPEAKER T
CONSTANT CURRENT
THERMAL PROTECTOR
CASCADE
PRE DRIVER
CLIPPING IND. DETECTOR
CURRENT LIMITTER
POWER TRANSISTOR
LIPPLE FILTER
SPEAKER PROTECTOR
THERMAL SENSOR
DRIVER
DRIVER-L (P) P.C.BOARD
DRIVER-L (N) P.C.BOARD
DRIVER-R (N) P.C.BOARD
DRIVER-R (P) P.C.BOARD
TO CB212 MAIN-AMP (R) P.C.BOARD
Q104 2SA1208
Q105 2SA1361
Q125 2SC3421
Q106 2SC3424
Q127 2SK614
Q107 UN1214
Q108 2SC3378
Q109 2SA1335
Q122 2SC2922
Q123 2SC2922
Q124 2SC2922
Q119 2SA1216
Q120 2SA1216
Q121 2SA1216
Q113 2SC2344
Q114 2SC2240
Q112 2SC2240
Q117 2SA970
Q118 2SA1358
Q115 2SA970
Q116 2SA1011
Q129 2SA1361
Q111 2SA1006
Q128 2SC3424
Q110 2SC2336
Q210 2SC2336
Q228 2SC3424
Q211 2SA1006
Q229 2SA1361
Q204 2SA1208
Q205 2SA1361
Q225 2SC3421
Q206 2SC3424
Q227 2SK614
Q207 UN1214
Q208 2SC3378
Q209 2SA1335
Q222 2SC2922
Q223 2SC2922
Q224 2SC2922
Q219 2SA1216
Q220 2SA1216
Q221 2SA1216
Q213 2SC2344
Q214 2SC2240
Q212 2SC2240
Q217 2SA970
Q218 2SA1358
Q215 2SA970
Q216 2SA1011
E
F
G
H
I



NOTES:
1. All resistance values are in ohms, K=1,000
2. All capacitance values are in microfarads, P= $\frac{1}{1,000,000}$

Voltage Measuring Conditions
- Power Supply Voltage: AC 120V
- Measuring Meter: Digital Volt Meter
- Measuring point reference: Between Ground
- Measuring conditions: No Signal Input

Terminal Voltayge

	1	2	3	4	5	6	7	8	9
IC301	-0.5V	0V	0V	0V	-0.7V	1.9V	0V	1.2V	2.7V
IC302	12.1V	0V	17V						

L

	E	C	B
Q101	-10.85V -10.86V	-79.2V	-11.35V
Q102	-81.5V	-79.2V -80.9V	-80.9V
Q103	81.2V	34.1V	80.7V
Q104	81.4V	80.7V	80.7V
Q105	80.1V	1.83V	79.5V
Q106	-78.6V	-1.84V	-78V
Q107	-81.5V	-43.5V	-81.2V
Q108	0V	1.9V	0V
Q109	0V	-1.9V	0V
Q110	0.6V	79V	1.2V
Q111	-0.6V	-79V	-1.2V
Q112	-0.2V	80.5V	0V
Q113	81.6V	82.8V	82.2V
Q114	82.2V	82.8V	82.7V
Q115	-82.2V	-82.8V	-82.7V
Q116	-81.6V	-82.8V	-82.2V
Q117	74.2V	-0.54V	81.2V
Q118	12.1V	0V	11.9V
Q119	—	-79V	—
Q120	—	-79V	—
Q121	—	-79V	—
Q122	—	79V	—
Q123	—	79V	—
Q124	—	79V	—
Q125	-1.84V	1.83V	1.26V
Q128	1.2V	79V	1.8V
Q129	-1.2V	-79V	-1.8V

R

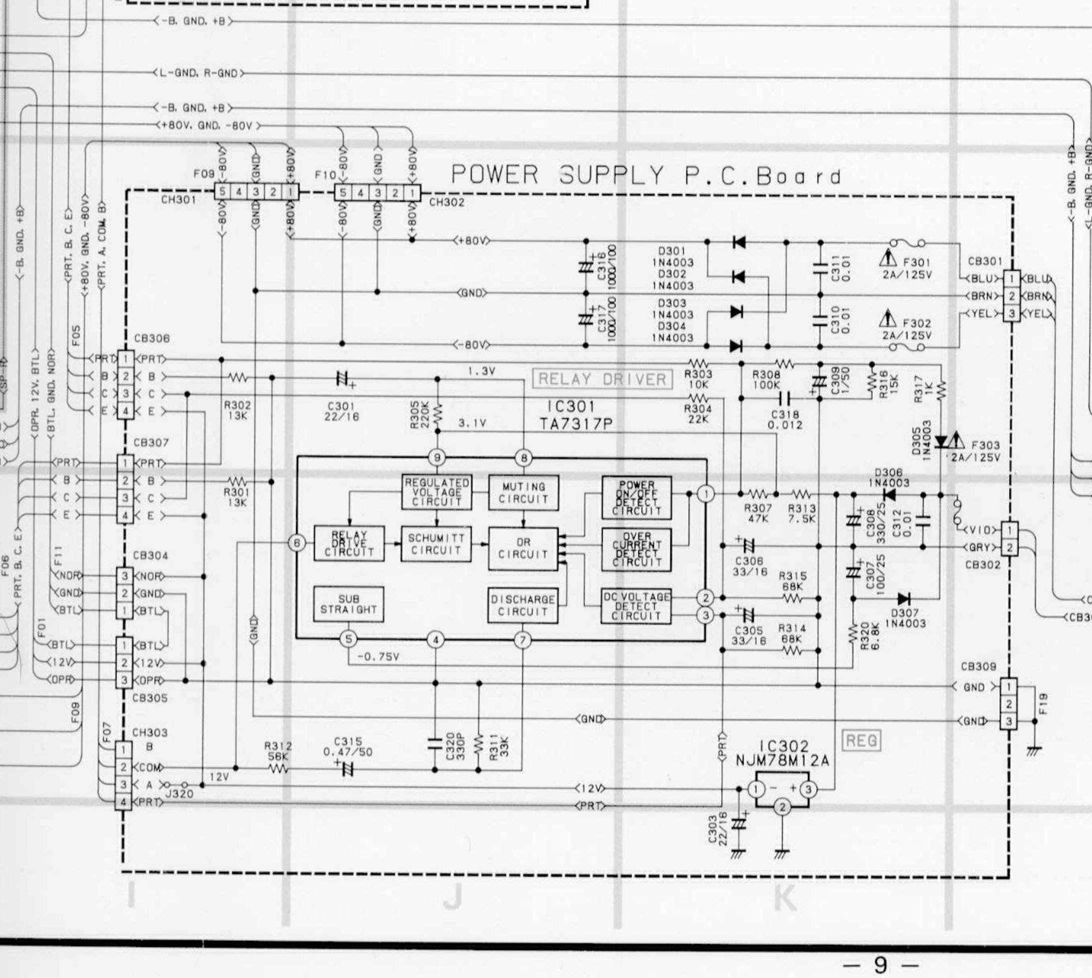
	E	C	B
Q201	-10.85V -10.86V	-79.2V	-11.35V
Q202	-81.5V	-79.2V -80.9V	-80.9V
Q203	81.2V	34.1V	80.7V
Q204	81.4V	80.7V	80.7V
Q205	80.1V	1.83V	79.5V
Q206	-78.6V	-1.84V	-78V
Q207	-81.5V	-43.5V	-81.2V
Q208	0V	1.9V	0V
Q209	0V	-1.9V	0V
Q210	0.6V	79V	1.2V
Q211	-0.6V	-79V	-1.2V
Q212	-0.2V	80.5V	0V
Q213	81.6V	82.8V	82.2V
Q214	82.2V	82.8V	82.7V
Q215	-82.2V	-82.8V	-82.7V
Q216	-81.6V	-82.8V	-82.2V
Q217	74.2V	-0.54V	81.2V
Q218	12.1V	0V	11.9V
Q219	—	-79V	—
Q220	—	-79V	—
Q221	—	-79V	—
Q222	—	79V	—
Q223	—	79V	—
Q224	—	79V	—
Q225	-1.84V	1.83V	1.26V
Q228	1.2V	79V	1.8V
Q229	-1.2V	-79V	-1.8V

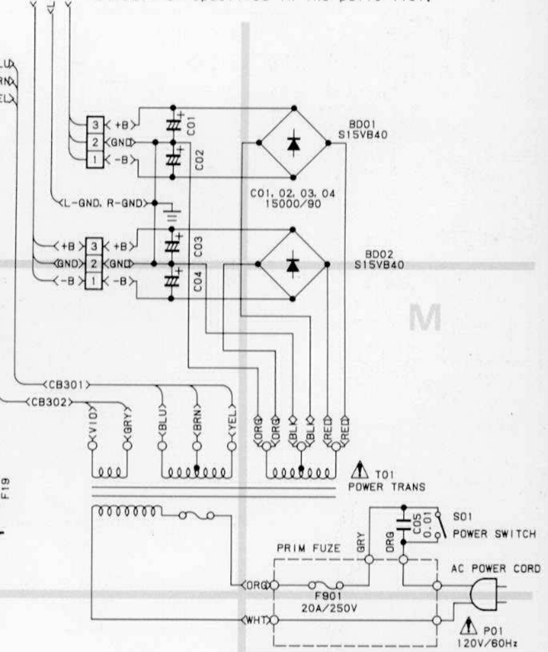
	S	D	G
Q126	-0.44V	-10.7V	0V
Q127	-78.6V	-81.2V	-79V
Q226	-0.44V	-10.7V	0V
Q227	-78.6V	-81.2V	-79V

	E	C	B
Q851	12V	0V	12V
Q852	12V	0V	12V
Q853	0V	12V	0V
Q854	0V	12V	0V
Q855	0V	0V	12V

CAUTION:

The ⚠ mark, the symbol NO. in a box in the schematic diagram and the shaded area in the parts list designate components which have special characteristics important for safety and should be replaced only with types identical to those in the original circuit or specified in the parts list.





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